電気材料技術雑誌 第14巻第2号
J.Soc.Elect.Mat.Eng. Vol.14, No.2, 2005

Electronics and Optoelectronics Based on and Harmonious with Living Creature and Nature

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So far highly developed electronics which support modern society have been based on mainly inorganic semiconductor technologies in which development of ultra-fine manufacturing methods are inevitable and tremendous efforts have been executed to develop much finer fabrication technology reaching nano-scale. However, they are highly costly and various high barriers exist to overcome difficulty. On this respect, we should learn a lot from nature in which even nano-structures are formed by self-assembly method without highly developed costly equipments and not in ultra-clean environmental.

That is, to sustain steady development of our society safely it is important and effective to develop electronics and optoelectronics based on living creature and natural products. It should also be stressed that these electronic and optoelectronics devices must harmonious with environmental in nature. That is, they must be not costly for manufacturing and operation, must not give serious influence to limitation of natural resources and also not harmful to the environment allowing recycling. In such sense, organic materials mainly based on C, H, N, O etc. which are main components forming the living creature and plants and easily obtainable at the surface of our earth, are quite promising. We also can learn from and utilize natural products in sea and also underground.

There are many interesting living creatures and materials in sea, underground and in air, for example diatoms in sea, zeolite underground and insects in air. We should learn structures, manufacturing methods, operating mechanisms and systems and so on.

It should also be mentioned that even a simple known technology based on already developed conventional technology can be utilized quite effectively by introducing new ideas and concepts in them.

In this paper, several examples are discussed.

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